OCCURRENCE OF DEEP-WATER LEATHERJACKET FISH *Thamnaconus tessellatus* (GUNTHER, 1880) (TETRAODONTIFORMES: MONACANTHIDAE) FROM BITUNG, INDONESIA

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ABSTRACT

Occurrence of Deep-water Leatherjacket Fish *Thamnaconus tessellatus* (Gunther, 1880) (Tetraodontiformes: Monacanthidae) From Bitung, Indonesia. One specimen of *Thamnaconus tessellatus* (CRDOA 6367; 204.00 mm SL) was collected from Winenet Fish Market, Bitung, North Sulawesi, Indonesia, on 11 February 2008. The specimen was collected from depths of about 20–30 m in association with other coral reef fishes catch. This genus is poorly known because of their generally deep-water habitats and normally on the trawling grounds. The deepest record for the genus is collected by trawl net at a depth of 360 m (Fiji), 270 m (Loyalty Island) and between (230-260) m (New Caledonian). Found in many locations in southern Japan southward through the Ogasawara Islands, Malaysia, Taiwan, Hong Kong, Philippines, Indonesia and Papua New Guinea to Australia and New Caledonia. Its morphological features and diagnostic characters are discussed and illustrated.

Key words: Thamnaconus tesselltus, Monacanthidae, Deep-water Leatherjacket, Indonesia.

INTRODUCTION

The fishes of the order Tetraodontiformes are diverse marine fishes group. They belong to the class Actinopterygii. Nelson (1984) divided this order into 8 families represented by 64 genera and 320 species. Matsuura (2001) divided into 10 families: Triacanthodidae, Triacanthidae, Balistidae, Monacanthidae, Ostraciidae, Aracanidae, Triodontidae, Diodontidae and Molidae.

The family Monacanthidae divided in to 31 genera (e.g., *Aluiera*, *Amanses*, *Cantherines*, *Chaetodermis*, *Monacanthus*, *Navodon*, *Oxymonacanthus*, *Paraluterus*, *Paramonacanthus*, *Pervagor*, *Pseudoluterius* and *Stephanolepis*) with 95 species (Nelson, 1984). In the Central West Pacific region, family Monacanthidae represent by 23 genera (*Acreichthys*, *Aluterus*, *Amanses*, *Anacanthus*, *Arotrolepis*, *Brachaluteres*, *Cantherhines*, *Cantheschenia*, *Chaetodermis*, *Colurodontis*, *Eubalichthys*, *Monacanthus*, *Nelusetta*, *Oxymonacanthus*, *Paraluteres*, *Paramonacanthus*, *Pervagor*, *Pseudaluteres*, *Pseudomonacanthus*, *Rudarius*, *Scobinichthys*, *Stephanolepis* and *Thamnaconus*) and 45 species (Hutchins, 2001c).

The family Monacanthidae belongs to the group of trigger-fishes, which the name of fishes derives from the first spine of the first dorsal fin which may be locked in an erect position by small second spine placed behind the first dorsal spine. They are small to medium-sized marine fishes with high and deep, laterally compressed bodies. Scales are rough, rhomboid-shaped, often having small spines. Mouth has a long snout and with close set chisel-like teeth. The eyes are small and placed high on the head. The second dorsal and anal fin contains no spines, consist of simple soft rays. The pelvic fins are absent; instead they are replaced by the pelvic bone. The caudal peduncle is well defined with the form of the caudal fin varying greatly between species.

In the world this genus is represented by 10 species *T. hypargyreus* (Cope, 1871), *T. septentrionalis* (Günther, 1874), *T. modestus* (Günther, 1877), *T. tessellatus* (Günther, 1880), *T. degeni* (Regan, 1903), *T. modestoides* (Barnard, 1927), *T. arenaceus* (Barnard, 1927), *T. fajardoi* Smith, 1953, *T. fijiensis* (Hutchins & Matsuura, 1984) and *T. xanthopterus* (Xu & Zhan in Xu, 1988) (Eschmeyer, 1998), whereas in the West Central Pacific this genus represented by 5 species *T. fijiensis*, *T. hypargyreus*, *T. melanoproctes*, *T. modestoides* and *T. tessellates* (Hutchin, 2001).

The fishes of the genus *Thamnaconus* are poorly known because of their generally deep-water

habitats between 72 - 248 m (Hutchins, 2001a) and normally on the trawling grounds. The deepest record for the genus is 360 m collected from Fiji (Hutchins and Matsuura, 1984). Other specimens were found by trawling at Loyalty Island at 270 m depth and New Caledonian at a depth of 230-260 m (Matsuura and Tyler, 1997). *T. modestoides* is easily distinguished from other species by the presence of 1st dorsal spine above the center of the eyes and by the gill opening below anterior ½ of eyes.

There are numerous technical or research reports, published earlier, which contain information on fishes of the Indonesian waters. However, most of these reports concentrate on community structure of some coastal ecosystems. Valid record for taxonomic purposes of the fish specimen of Indonesia and surrounding waters were reported, such as Bleeker and Weber (1911), Weber and de Beaufort (1913), Weber and de Beaufort (1916), Weber and de Beaufort (1922), Weber and de Beaufort (1929), Weber and de Beaufort (1931), Weber and de Beaufort (1936), de Beaufort (1940), de Beaufort and Chapman (1951), Weber and de Beaufort (1953), Weber and de Beaufort (1962), Gloerfelt-Tarp & Kailola (1984) in Indo-Australian Archipelago; Fowler (1933), Herre (1953), Montalban (1928), Fowler & Bean (1928) in the Philippines; Munro (1967) in Papua New Guinea; Mohsin & Ambak (1996), Isa *et al.* (1998) in Malaysia and Randall and Lim (ed.), 2000 in the South China Sea. Numerous information on guide book or guide identification are also available such as Allen and Swainston (1988), Kuiter (2001), Allen (1997), Matsuura *et al.* (eds) (2000), Kimura and Matsuura (eds.) (2003).

MATERIALS AND METHODS

One specimen of *Thamnaconus tessellatus* (204.00 mm SL) was collected from Winenet Fish Market, Bitung, North Sulawesi, Indonesia; CRDOA 6367, position on 11th February 2008 (Fig.1). Valid record of the fish specimen was used data from Fishbase (Froese and Pauly (eds.), 2006 and Eschmeyer (ed.), 1998).

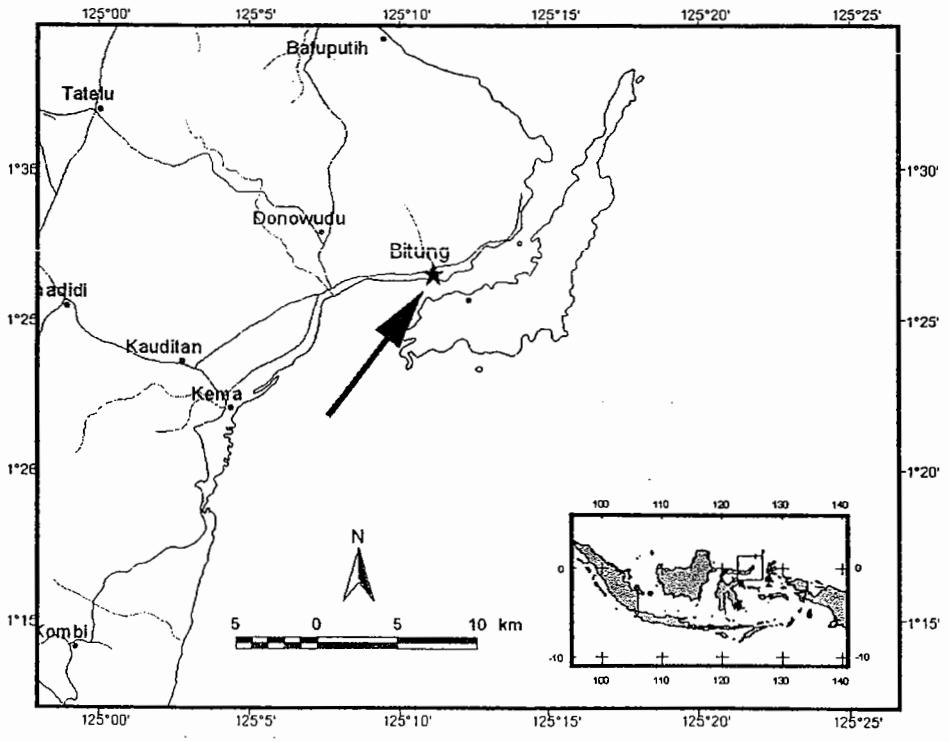

Figure 1. Location of Winenet Local Fish Market, Bitung, North Sulawesi, Indonesia where the specimen was collected

Measurements were made on the left side of specimen by using dial-point caliper to the nearest of 0.05 mm. Length is recorded to 0.05 mm only for measurements under 150 mm, measurements bigger than 150 mm is recorded to tenths of mm. Total length is measured from the tip of snout to the tip of caudal fin. Standard length (SL) is taken from the front of the upper lip to the base of the caudal fin (end of hypural plate). Head length (HL) is measured from the front of the upper lip in the median plane to the end of the opercular membrane. Snout length is taken from the same anterior point to the fleshy edge of the orbit. Body depth is the greatest depth from the base of the dorsal fin, adjusting for any obvious malformations of preservation. Body width is the maximum width just behind the gill opening (anterior to the base of the pectoral fins). Orbit diameter is the greatest diameter to the fleshy edges of the orbit. Interorbital width is measured between eyes on top of head area. The length of the upper jaw is measured from the front of the upper lip to the posterior fleshy edge of the jaw. The depth of the caudal peduncle is the least depth, and the length of the caudal peduncle is taken horizontally from the rear base of the anal fin to the base of the caudal fin. Lengths of the dorsal and anal spines and rays are measured from the point they depart from the contour of the body. Dorsal fin base is taken from the anterior base of first dorsal rays to the end of the dorsal fin rays. Pectoral and pelvic-fin lengths are the lengths of the longest ray. Anal fin base is taken from the base of anterior anal fin rays to the base of the end of anal fin rays.

RESULT AND DISCUSSION

Diagnostic characters

Family Monacanthidae

Small to medium-sized fishes (to 1 m), usually with deep, highly compressed bodies; body shape varies from oblong to almost circular. Mouth small, generally terminal, non-protractile; teeth pointed and not fused together, central pair usually the largest in each jaw; vomer and palatines without teeth. Gill opening a short vertical to oblique slit in front of or above pectoral-fin base. Two dorsal fins, first dorsal fin consisting of a prominent spine which can be locked upright by a second very small spine, second dorsal fin with 22 to 52 simple (unbranched) soft rays, well separated from first fin; anal fin with 20 to 62 simple (unbranched) soft rays; caudal fin with 12 branched rays; pectoral fins with 8 to 15 simple rays; pelvic fins a bony rudiment fused to posterior end of pelvis, posterior portion movable in some species. Pelvis usually capable of vertical movement giving rise to a ventral flap. Skin smooth to rough, shagreen-like, with minute to small scales armed with 1 to many fine spinules, spinules enlarged in some species forming bristles or spines on posterior portion of body; scales on head of some species with strong flattened spinules. Vertebrae 7+12 or 7+13 (Hutchins, 2001).

Genus *Thamnaconus* Smith, 1949

Valid as *Thamnaconus* Smith 1949 — (Matsuura 1984, Hutchins & Matsuura 1984, Hutchins 1986, Matsuura & Tyler 1997, Hutchins 2001).

First dorsal-fin spine fully erectile, not enveloped in a loose, prominent flap of skin. Snout not produced into a tube. Second dorsal and anal fins with 39 or less soft rays. Pelvic-fin rudiment obvious (sometimes relatively small in large specimens), located at or near rear end of pelvis (Fig. 2); body generally not circular, abdomen not inflatable. Pelvic-fin rudiment bound immovably to rear end of pelvis. Gill slit positioned in advance of base of pectoral fins. Anal-fin rays 26 to 37; stout bristles or long spines absent from side of body, although short fine bristles and/or spines sometimes present on caudal peduncle; teeth covered by lips when mouth closed. Ventral flap small to moderate in size; gill opening mostly below eye. Head not very long, depth of body equal to or greater than length of head. Second dorsal-fin rays 31 to 41; anal-fin rays 29 to 37. Second dorsal and anal fins elevated anteriorly in adult, more prominent in male; bristles and spines absent from caudal peduncle. Pelvic-fin rudiment moderate in size, located at posterior end of pelvis (Hutchins *in* Carpenter and Niem, 2001; Matsuura *in* Masuda *et al.*, 1984; Hutchins & Matsuura, 1984; Hutchins, 1986; Gomon *et al.*, 1994; Matsuura & Tyler, 1997).

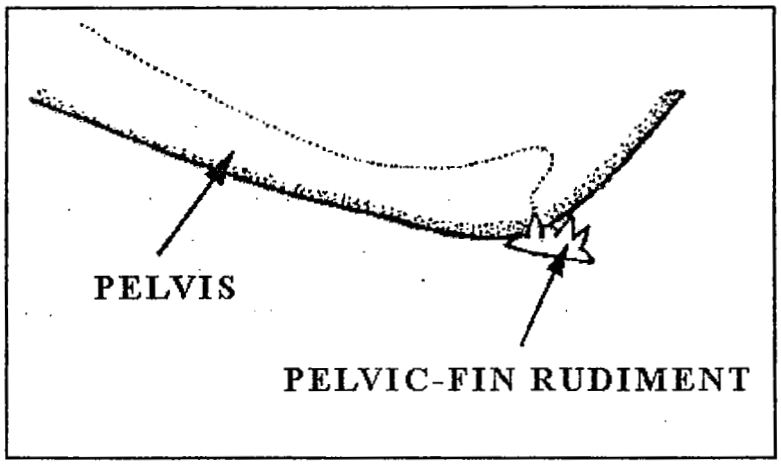

Figure 2. Pelvic-fin rudiment at posterior end of pelvis of genus *Thamnaconus* Smith, 1949 (after Hutchins 2001)

***Thamnaconus tessellatus* (Gunther, 1880)**

English Name: Manyspotted leatherjacket;
Proposed Indonesian Name: Jaket kulit bintik
Local Common Name: Tato (Fig. 3)
Synonym:
Cantherines tessellatus (Günther, 1880); 1984:361; Matsuura (1985).
Valid as *Thamnaconus tessellatus* (Günther 1880) — (Matsuura, 1984, Matsuura, 1985, Matsuura & Tachikawa 1994, Matsuura & Tyler 1997, Hutchins, 2000; Nakabo 2000, Hutchins 2001b; 2001c).
Specimen Examined: CRDOA 6367, 240.00 mm SL, 11 February 2008, Market Collection, Winenet Market, Bitung, North Sulawesi, Indonesia;

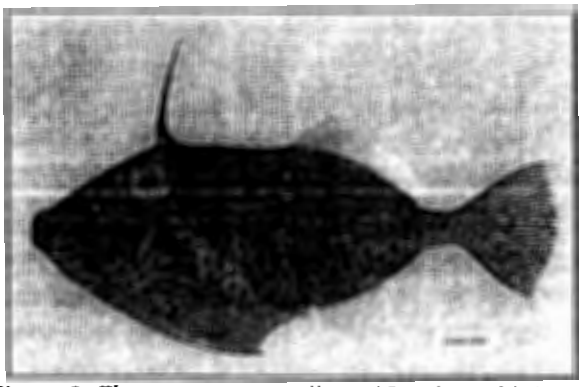

Figure 3. *Thamnaconus tessellatus* (Gunther, 1880); CRDOA 6367; 204.00 mm SL

Description

Meristic: - D II, 33-37; A 32-36; P_1 13-14
Counts and measurements of specimen were presented at Table 1. Body depth contained 2.11 times in SL. Snout straight to anterior of eye, after just convex to first dorsal fin base. First dorsal spine long, originating over center of eye. HL less than body depth; ventral flap of small to medium size; second dorsal fin rays 34; anal fin rays 32; pectoral fin rays 13 soft dorsal and anal fins noticeably higher anteriorly; caudal fin rounded, caudal peduncle less than HL. The soft dorsal and anal fins are approximately equal and opposite and the caudal fin with 12 principal rays. The pectoral fins are small and the pelvic fins have been reduced to a small, non-movable spine which is placed at the end of a long pelvic bone. Encasing scales composed of 2 segments, immovably articulated with pelvis. Ventral fin rudiment at tip of pelvis not movable (Fig.4). Pelvic fin rudiment non-mobile, projecting prominently rearward of ventral flap. Caudal peduncle unarmed.

Color: Body violet brown above; spots on body, except pelvis area dark brown, spots on head lighter. Soft dorsal and anal fins plain brownished, caudal fin blackish.

Table 1. Counts and measurements of *Thamnaconus tessellatus* (Gunther, 1880)

Counts and Measurements		CRDOA 6367
Counts	Dorsal fin rays	II, 34
	Anal fin rays	32
	Pectoral fin rays	13
	Ventral fin rays	-
	Caudal fin rays	12
Measurements	Body and Head	
	Total length	251.00
	Standard Length	204.00
	Body depth	96.60
	Body width	31.10
	Head length	64.95
	Snout length	53.50
	Orbit diameter	19.60
	Interorbital width	22.95
	Upper-jaw length	8.30
	Predorsal length	68.05
	Preanal length	132.10
	Prepelvic length	113.80
	Caudal-peduncle depth	16.30
	Caudal-peduncle length	22.95
	Dorsal fin	
	Dorsal-fin base	62.95
	First dorsal spine	50.05
	Longest dorsal ray	27.90
	Anal fin	
	Anal-fin base	55.15
	Longest anal ray	26.10
	Caudal fin	
	Caudal-fin length	40.70
	Pectoral fin	
	Pectoral-fin length	24.25

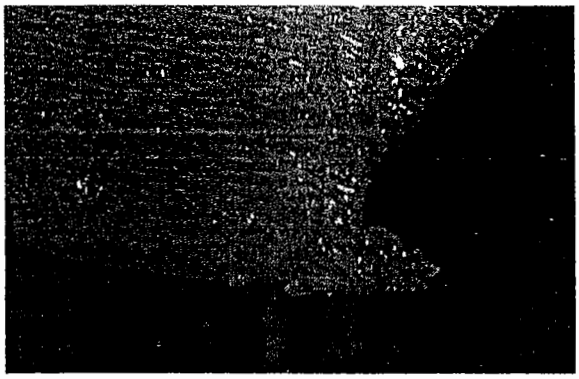

Figure 4. Pelvic-fin rudiment at posterior end of pelvis of *Thamnaconus tessellatus* (Gunther, 1880), CRDOA 6367, 204.00 mm SL

Distribution

Found in northwestern and northeastern Australia, New Caledonia, Indonesia, the Philippines, and Japan (Matsuura, 1984). Found in many locations in northwestern and northeastern Australia, New Caledonia, Indonesia, the Philippines, and Japan (Hutchins, 2001) (Fig. 5); southern Japan southwrd through the Philippines and Indonesia to eastern Australia (Matsuura and Tyler *in* Sainsbury, 1987). This species has also been recorded from Philippines (Herre, 1924); Australia and Indonesia (Gloerfelt-Tarp and Kailola, 1984); Japan (Masuda *et al.*, 1984), Papua

New Guinea (Kailola, 1991); Taiwan (Yamada *et al.*, 1995); New Caledonia (Matsuura and Tyler, 1997); Ogasawara Islands (Randall *et al.*, 1997); Hong Kong (Ni and Kwok, 1999) as shown Fig. 6.

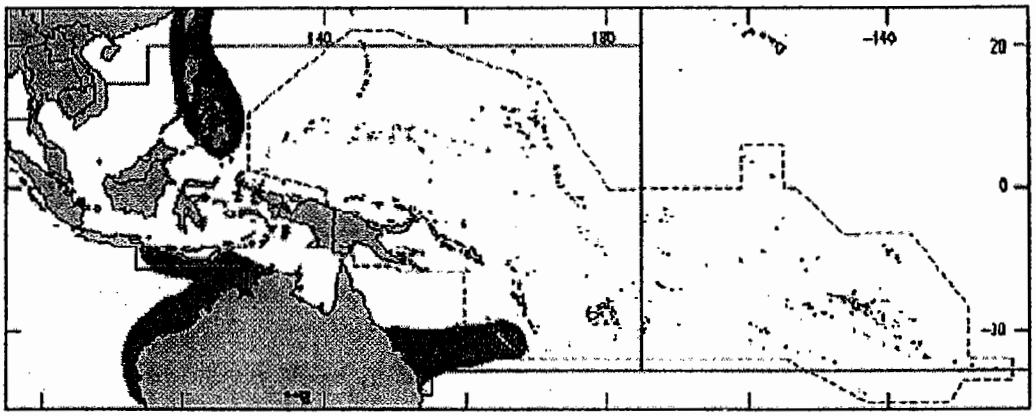

Figure 5. Geographic distribution of *Thamnaconus tessellatus* (Gunther, 1880) at Western Central Pacific (after Hutchins, 2001)

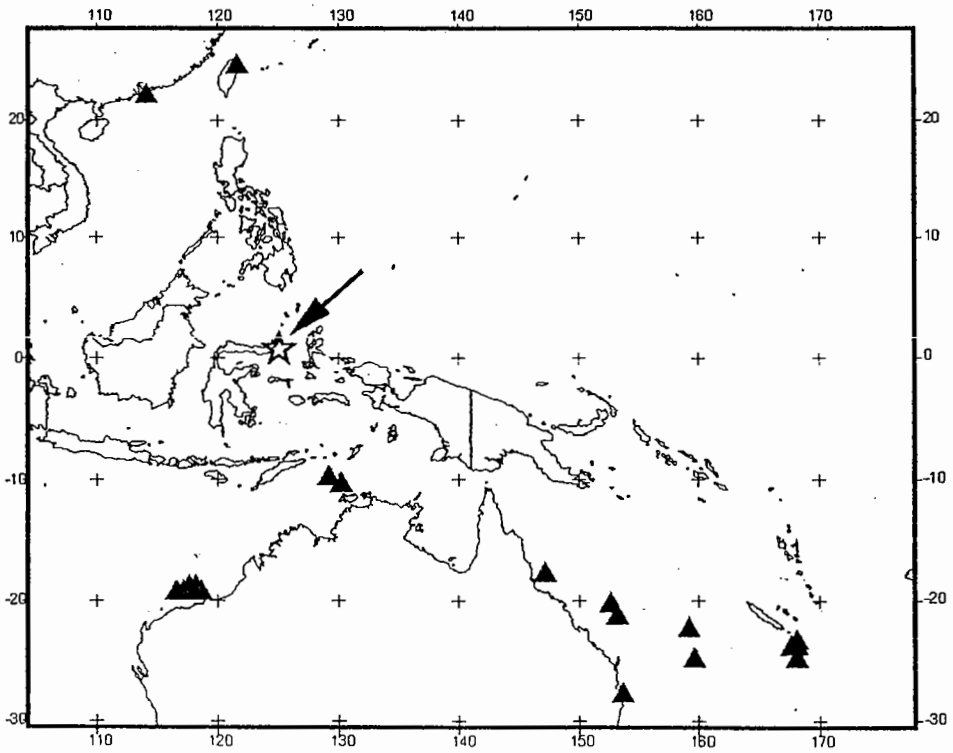

Figure 6. Geographic distribution of *Thamnaconus tessellatus* (Gunther, 1880) on the world based on Fishbase data. The triangle are the position of specimen from Froese and Pauly (eds.) (2006), while the star is the position of the specimen from Bitung, North Sulawesi, Indonesia

Remark

Maximum total length about 28 cm. Inhabits moderately deep waters at depths between 120 and 236 m. Most triggerfish are colorful and are marked with patterns of lines and spots.

Although triggerfish have small mouths the jaws and teeth are strong enough to broken shell or carapace of the benthic invertebrates such as crabs, mollusks and sea urchins. They will often take refuge in a hole in the reef and lock the first dorsal fin spine in an upright position, provides a defense against being swallowed or dragged from crevices by predators. Triggerfish are solitary fish which swim by undulating their second dorsal fin and anal fin. Strong sweeping caudal fin will be use to accelerate rapidly if the fish frightened.

Similar family and species

Balistidae with 3 dorsal-fin spines; no large, obvious pelvic-fin spines; teeth usually incisor-like and more massive, 8 in an outer series in each jaw; scales larger, rectilinear and easily recognized as individual units, and tough but not shagreen-like.

Similar to species of the same family Monacanthidae, *Parika scaber* (Forster, 1801), but differs by absent of barbs on posterolateral edges of dorsal spine directed backwards (Matsuura, 1990).

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